

Microgastrine (Hymenoptera: Braconidae) Parasitoids of *Colias lesbia* (Fabricius) (Lepidoptera: Pieridae)

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Abstract.—The microgastrine (Braconidae) parasitoids of *Colias lesbia* (Fabricius), a lepidopteran pest of alfalfa in southern temperate regions of South America, are reviewed. Three species, *Cotesia ayerza* (Brèthes), *C. glomerata* (Linnaeus) and *C. lesbiae* (Blanchard) are recognized and the morphological differences between them are presented. A lectotype for *C. ayerza* is designated.

Colias lesbia (Fabricius) is a lepidopteran pest of alfalfa, and is widespread in the southern temperate regions of South America. Throughout its range, it is attacked by three microgastrine (Braconidae) parasitoids. The taxonomy and identification of these parasitoids, which are all members of the genus *Cotesia*, have been problematic, with between two and five species being recognized in the complex. The purpose of this paper is to resolve these problems and to present morphological characteristics to distinguish between the species of *Cotesia* that attack *Colias lesbia*.

The subfamily Microgastrinae is cosmopolitan and contains thousands of species (Shenefelt 1972). They are internal parasitoids of larval Lepidoptera and are important in the natural and manipulated control of many pest species. The genus *Cotesia* contains hundreds of species that have been formally described, but even more that have not yet been described. The genus is also cosmopolitan and may be distinguished from all other Microgastrinae by the sculpture and shape of the first metasomal tergum and by the short ovipositor of females (cf. Mason 1981).

Shenefelt (1972, 1980) lists three species of Microgastrinae as parasitoids of *Colias*

lesbia, viz., *Cotesia glomerata* (Linnaeus), *C. ayerza* (Brèthes), and *C. lesbiae* (Blanchard) (all as *Apanteles*). There are other microgastrine names recorded as parasitoids of *Colias lesbia*; however, owing to well-researched synonymies (cf. Shenefelt 1972), only these three remain current in the literature.

Syntypes of *C. ayerza* were borrowed from the Museo Argentino de Ciencias Naturales and specimens of *C. lesbiae* determined by both Blanchard and Brèthes were borrowed from the Museo de La Plata. The type of *C. glomerata* is no longer extant but the description by Nixon (1974) and reliably identified specimens from Europe and North America (determined by G.E.J. Nixon and W.R.M. Mason respectively) were used for comparative purposes.

C. glomerata may be distinguished from the other two species by the color of the hind femur which is yellow with a small melanic region in the apical 1/6. The hind femora of *C. ayerza* and *C. lesbiae* are uniformly brown. *C. ayerza* and *C. lesbiae* may be distinguished from each other by the dimensions of the medial tergite of the first metasomal segment. That of *C. ayerza* is about as wide as long whereas that of *C. lesbiae* is more than 1.5 times longer

Table 1. Comparison of *Cotesia* species parasitizing *Colias lesbia*.

Characters and states	Taxa
	a = <i>C. ayzerza</i>
	g = <i>C. glomerata</i>
	l = <i>C. lesbiae</i>
1. Hind femur color.	
a) Entirely brown (melanic)	a, l
b) Yellow except for brown in apical 1/6	g
2. Hypopygium of female.	
a) tapering to a sharp point apically	a, l
b) with a deep semicircular emargination apically [c.f. Fig. 46 in Nixon (1974)]	g
3. First metasomal median tergite.	
a) more than 1.5 times longer than wide	g, l
b) about as long as wide	a
4. Sculpture of posteromedial region of mesoscutum, directly anterad mesoscutellar sulcus.	
a) with longitudinal rugosities (Fig. 1)	g
b) lacking longitudinal rugosities (Fig. 2)	a, l

than wide. Other morphological differences between the three species are summarized in Table 1.

There may be a behavioral difference between *C. lesbiae* and the other two species. *C. ayzerza* and *C. glomerata*, like most species of *Cotesia*, are gregarious (Mason

1981, Nixon 1974) with many eggs laid in each host, whereas *C. lesbiae* appears to be a solitary parasitoid (Hamity 1978).

Br  thes did not designate a holotype for *Apanteles ayzerza* and we take this opportunity to designate a lectotype and two paralectotypes. All three specimens are on



Figs. 1–2. Dorsal aspects of mesosomata. 1 (left), *Cotesia glomerata*. The arrow on the mesoscutum indicates longitudinal rugosities; 2 (right), *Cotesia lesbiae*.

the same pin, mounted on one, small, quadrate, piece of paper. The lectotype is a female and is the specimen in the middle of the piece of paper flanked by the two paralectotypes which both appear to be males, but owing to the poor condition of the specimens, sex is difficult to determine. The lectotype is missing both left wings and the right hind wing but it is intact otherwise. All specimens appear to be conspecific. There are four original, hand-written labels on the pin. The uppermost reads "La Pampa 111.1920 J. Williamson". The second reads, "parasite de *Colias lesbia*". The third label is small and has a few marks that are not decipherable; and the fourth reads "Apanteles Ayerza Brèthes". We have also added a red label with the following: "Lectotype Apanteles ayerza Brèthes designated by Sharkey, Finell, and Leathers".

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